36 and 43, respectively) R^1 and R^2 are defined as groups linking Si to X^1 and S to X^2. Thus, in these embodiments, R^1 and R^2 are at least ***divalent*** linking groups. Therefore, in the amendments numbered 4, 11 and 14, the word "monovalent" has been deleted. This amendment is supported by the claims as filed. Moreover, it would be immediately apparent to one of skill, on examining the claims, that R^1 and R^2 cannot be monovalent.

In the application as filed, many of the organic groups are *defined* only as substituents, but they are *claimed* as "central" or backbone groups to which substituents can be attached. As there is adequate support for these groups having both a substituent and "central" group character, a number of the definitions have been amended to include both these characteristics of the organic groups. Since the definitions as amended are no longer specific to the substituent character of the organic groups, the term "nucleus" is removed from the definitions by amendment and replaced with a recital that the groups are linked to or integral to either R^1 or R^2.

These amendments merely correct obvious errors in the Specification. One of skill in the art, on examining the claims and the definitions in tandem would recognize that the two were not in harmony. Moreover, one of skill would have realized that by making the present amendments to the definitions the claims and the definitions could be brought into harmony. Thus, no new matter is introduced by these amendments. *See*, for example, *In re Oda*, 170 USPQ 260 (CCPA 1971).

The specification is further amended by providing each figure with its own separate description. The modified description for Fig. 5 is paraphrased from Example 1, beginning at page 58. The modified description for Fig. 15 is paraphrased from Example 5, beginning at page 72. The modified description for Fig 17 is paraphrased from Example 5, beginning at page 72; the portions most relevant to Fig. 17 beginning at page 73, line 28. The modified description for Fig. 18 is paraphrased from Example 5, beginning at page 72; the portions most relevant to Fig. 18 beginning at page 75, line 6. The modified description of Fig. 19 is paraphrased from Example 5, beginning at page 72; the portions most relevant to Fig. 19 being at page 76, lines 1-2.

In an Official Action in the parent case of the present application, the Examiner objected to the specification as filed, stating that Applicants recite Examples 4 and 5 on page 58, yet the Examiner is unable to find these Examples. Applicants direct the Examiner's attention to page 71 (Example 4) and pages 72-76 (Example 5) of the specification as filed for the subject Examples. If the Examiner's files are incomplete as regards these pages, Applicants request that the Examiner inform them of this fact and provide them the opportunity to complete the deficient file by resubmitting the missing pages.

IN THE CLAIMS

Claims 1-65 and 90-108 are canceled without prejudice. Applicants expressly reserve the right to prosecute claims of substantially the same scope in a continuation or divisional application.

Claim 70 is amended to further clarify the subject matter of the claim, by inserting the recitation that the "strand" is a "nucleic acid strand." No new matter is added by this amendment.

Claim 71 is amended to further clarify the subject matter of the claim by correcting an improper dependence. Claim 71, as filed, is dependent on claim 70. Claim 70 is now amended to recite dependence on claim 67, which provides proper antecedent basis. No new matter is added by this amendment.

New claim 109 is introduced, which recites that the recognition moiety is "interacting with an analyte." The amendment is supported throughout the specification. *See*, particularly, page 37, line 13-14; "The recognition moieties bind to, or otherwise interact with, the analyte of interest," and Example 1, *et seq*.

New claim 110 is added, reciting that the device has an opening providing access to an analyte to the inside of the device. The amendment is supported in the specification. *See*, particularly, Example 2 and Fig. 7a.

New claim 111 is added, reciting that the organic layer is a rubbed polymer. The amendment finds support in the specification. *See*, particularly, page 37, lines 12-13; "a recognition moiety can be presented by a polymer surface (*e.g.*, a

rubbed polymer surface)," and the incorporation by reference of the review by Cognard discussing the anchoring of liquid crystals by rubbed polymer layers.

New claim 112 is added, reciting that the rubbed polymer layer is a biopolymer. The amendment is supported in the specification. *See*, page 25, line 28, disclosing that the organic layer can be a biopolymer.

New claim 113 is added, reciting that the biopolymer is a member selected from the group consisting of proteins, polysaccharides and combinations thereof. The amendment is supported in the specification. The term biomolecule is an art-recognized term encompassing, *inter alia*, proteins and polysaccharides. Also, *see*, page 37, lines 20-22 and claim 57, reciting selected members of the genus of biomolecules.

As the new claims are fully supported by the specification as filed, there is no new matter added by the amendments. An Appendix setting forth the claims now pending is attached hereto for the Examiner's convenience.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,

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APPENDIX-PENDING CLAIMS

66. A device for detecting an interaction between an analyte and a recognition moiety, said device comprising:

a first substrate having a surface;

a second substrate having a surface, said first substrate and said second substrate being aligned such that said surface of said first substrate opposes said surface of said second substrate;

a first organic layer attached to said surface of said first substrate, wherein said organic layer comprises a first recognition moiety which interacts with said analyte; and

a mesogenic layer between said first substrate and said second substrate, said mesogenic layer comprising a plurality of mesogens, wherein at least a portion of said plurality of mesogens undergo a detectable switch in orientation upon interaction between said first recognition moiety and said analyte, whereby said presence of said analyte is detected.

67. The device according to claim **66**, wherein said analyte is a member selected from the group consisting of acids, bases, organic ions, inorganic ions, pharmaceuticals, herbicides, pesticides, chemical warfare agents, noxious gases, biomolecules and combinations thereof.

68. The device according to claim **66**, wherein said interaction is a member selected from the group consisting of covalent bonding, ionic bonding, hydrogen bonding, van der Waals interactions, repulsive electronic interactions, attractive electronic interactions, hydrophobic interactions, hydrophilic interactions and combinations thereof.

69. The device according to claim **67**, wherein said interaction is an ionic interaction and the analyte is a member selected from the group consisting of acids, bases, metal ions and metal ion binding ligands.

70. (Amended) The device according to claim **67**, wherein said analyte is a nucleic acid and said interaction is a hydrogen bonding interaction between said nucleic acid and a nucleic acid strand having an at least partially complementary sequence.

71. (Amended) The device according to claim **67**, wherein said interaction is between a protein and a small molecule.

72. The device according to claim **71**, wherein said interaction is between an enzyme and a substrate for said enzyme.

73. The device according to claim **71**, wherein said interaction is between an antibody and a complementary antigen.

74. The device according to claim **71**, wherein said interaction is between biotin and avidin.

75. The device according to claim **71**, wherein said interaction is between biotin and an antibiotin antibody.

76. A method for detecting an analyte, comprising:

(a) contacting with said analyte a recognition moiety for said analyte, wherein said contacting causes at least a portion of a plurality of mesogens proximate to said recognition moiety to detectably switch from a first orientation to a second orientation upon contacting said analyte with said recognition moiety; and

(b) detecting said second configuration of said at least a portion of said plurality of mesogens, whereby said analyte is detected.

77. The method according to claim **76**, wherein said analyte is a member selected from the group consisting of vapors, gases and liquids.

78. The method according to claim **77**, wherein said vapor is a member selected from the group consisting of vapors of a single compound and vapors of a mixture of compounds.

79. The method of claim **77**, wherein said gas is a member selected from the group consisting of a single gaseous compound and mixtures of gaseous compounds.

80. The method of claim **77**, wherein said liquid is a member selected from the group consisting of a single liquid compound, mixtures of liquid compounds, solutions of solid compounds and solutions of gaseous compounds.

81. The method according to claim **76**, wherein said recognition moiety comprises a member selected from the group consisting of metal ions, metal-binding ligands, metal-ligand complexes, nucleic acids, peptides, cyclodextrins, acids, bases, antibodies, enzymes and combinations thereof.

82. The method according to claim **76**, wherein from about 10 to about 10^8 mesogens undergo said switching for each molecule of analyte interacting with said analyte.

83. The method according to claim **76**, wherein from about 10^3 to about 10^6 mesogens undergo said switching.

84. The method according to claim **76**, wherein said first orientation is a member selected from the group consisting of uniform, twisted, isotropic and nematic and said second orientation is a member selected from the group consisting of uniform, twisted, isotropic and nematic, with the proviso that said first orientation and said second orientation are different orientations.

85. The method according to claim **84**, wherein said detecting is achieved by a method selected from the group consisting of visual observation, microscopy, spectrometry, electronic techniques and combinations thereof.

86. The method according to claim **84**, wherein said visual observation detects a change in reflectance, transmission, absorbance, dispersion, diffraction, polarization and combinations thereof, of light impinging on said plurality of mesogens.

87. The method according to claim **85**, wherein said microscopy is a member selected from the group consisting of light microscopy, polarized light microscopy, atomic force microscopy, scanning tunneling microscopy and combinations thereof.

88. The method according to claim **85**, wherein said spectroscopic technique is a member selected from the group consisting of infrared spectroscopy, raman spectroscopy, x-ray spectroscopy, visible light spectroscopy, ultraviolet spectroscopy and combinations thereof.

89. The method according to claim **85**, wherein said electronic technique is a member selected from the group consisting of surface plasmon resonance, ellipsometry, impedometric methods and combinations thereof.

109. (New) A device comprising:

a first substrate having a surface;

a second substrate having a surface, said first substrate and said second substrate being aligned such that said surface of said first substrate opposes said surface of said second substrate;

a first organic layer attached to said surface of said first substrate, wherein said first organic layer comprises a first recognition moiety interacting with an analyte; and

a mesogenic layer between said first substrate and said second substrate, said mesogenic layer comprising a plurality of mesogenic compounds.

110. (New) The device according to claim **109**, further comprising an opening allowing communication between said interior portion of said device and an analyte access to said recognition moiety.

111. (New) The device according to claim **109**, wherein said organic layer is a rubbed polymer.

112. (New) The device according to claim **111**, wherein said rubbed polymer is a biopolymer.

113. (New) The device according to claim **112**, wherein said biopolymer is a member selected from the group consisting of proteins, polysaccharides and combinations thereof.